SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-40

Name: South Island Lake **County (ies)**: Minnehaha, McCook
Legal Description: T104-R 52-Sec. 30; T 104-R 53-Sec 25
Location from nearest town: 10 miles west of Colton, SD

Dates of present survey: July 17-18, 2007
Dates of last survey: July 19-20, 2005

Primary Game Species	Other Species
Walleye	Northern Pike
Yellow Perch	Black Crappie
Channel Catfish	Green Sunfish
	Black Bullhead

PHYSICAL DATA

Surface Area: 91 acres **Watershed area**: No data
Maximum depth: 16 ft. **Mean depth**: No data
Lake elevation at time of survey (from field observations): 2 feet low
Date the latest contour map was prepared: 1997

Ownership of Lake and Adjacent Lakeshore Properties

Island Lake is divided by a county highway into North and South Island lakes. South Island Lake is not listed as meandered public water in the State of South Dakota Listing of Meandered Lakes. Approximately half the lake and western shoreline is owned by the South Dakota Department of Game, Fish and Parks (GFP). The remainder of the lake and shoreline is privately owned.

Fishing Access

Shore fishermen frequently park along the county road to fish. Boat access is limited to a muddy beach on the north shore.

Field Observations of Water Quality and Aquatic Vegetation

The Secchi depth in South Island Lake was 30 cm (12 in). There were scattered beds of sago pondweed (*Potamogeton pectinatus*), cattail (Ty*phus spp.)* and bulrush (*Scirpus spp.*) along some of the shore.

BIOLOGICAL DATA

Methods:

South Island Lake was sampled on July 17-18, 2007 with five overnight trap-net sets. The trap nets are constructed with 19-mm-bar-mesh (¾ in) netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads.

Results and Discussion:

Trap Net Catch

Black bullheads (88.5%) were the most common species sampled in the trap nets (Table 1). Yellow perch, black crappie, walleye, channel catfish, northern pike, and bluegill were also sampled. Walleyes and yellow perch were stocked following the netting survey (Table 2).

Table 1. Total catch from five overnight trap net sets at South Island Lake, Minnehaha County, July 19-20, 2007.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	1,351	88.5	270.2	±113.8	358.0	9	0	100
Yellow Perch	91	6.0	18.2	±19.2	0.2	12	8	108
Black Crappie	67	4.4	13.4	±6.1	0.6	54	4	118
Walleye	6	0.3	1.2	±0.5	1.2	--	--	--
Channel Catfish	6	0.4	1.2	±1.0	0.0	--	--	--
Northern Pike	5	0.3	1.0	±0.8	3.8	--	--	--
Bluegill	1	0.1	0.2	±0.3	0.2	--	--	--

*One year (2005)

MANAGEMENT RECOMMENDATIONS

1. Reduce black bullhead abundance by commercial fishing, Department removal projects and predator management.

2. Improve access for launching boats, shore fishing and vehicle parking.

3. Stock adult predators when available to provide angling opportunity and control bullhead recruitment.

4. Conduct occasional lake surveys to monitor the fishery.

Table 2. Stocking record for South Island Lake, Minnehaha County, 1991-2007.

Year	Number	Species	Size
2005	532	Northern Pike	Adult
2006	142	Channel Catfish	Adult
2007	365	Walleye	Adult
	452	Walleye	Juvenile
	200	Yellow Perch	Fingerling

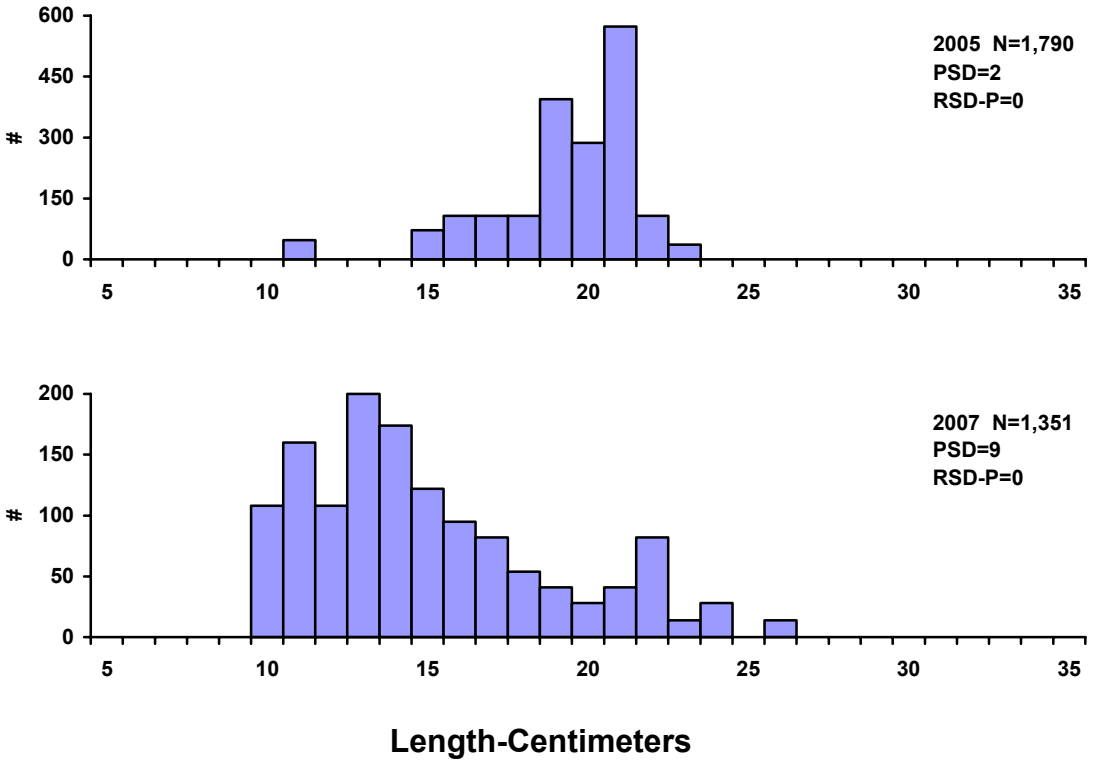

Figure 1. Length frequency histograms for black bullheads sampled with trap nets in South Island Lake, Minnehaha County, 2005, and 2007.

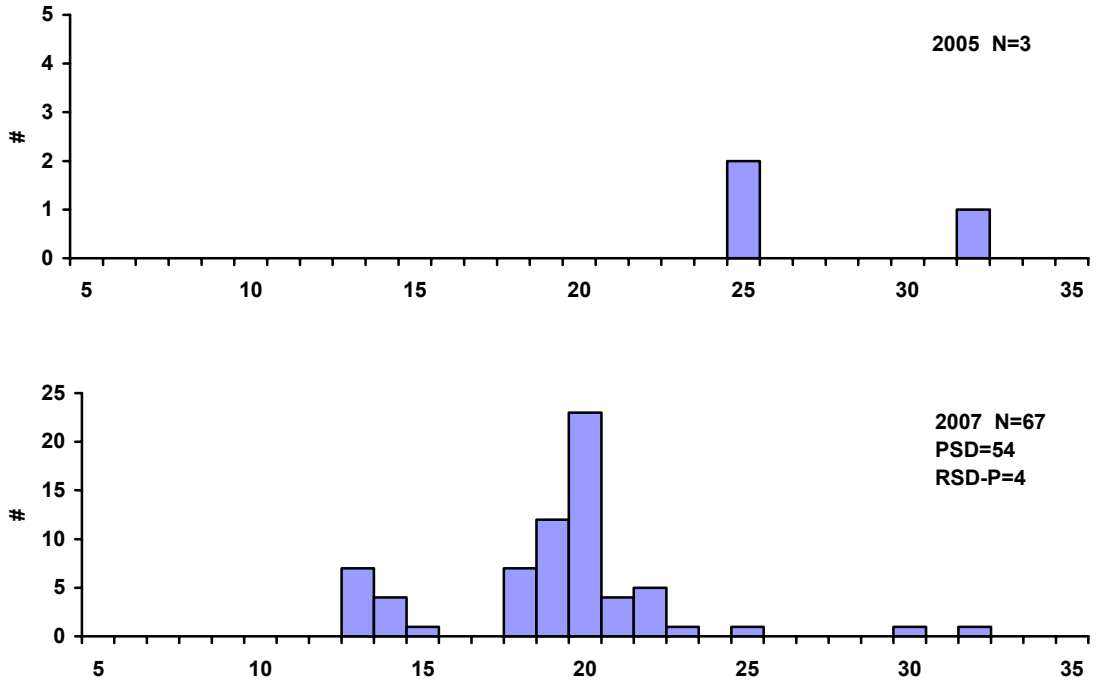

Figure 2. Length frequency histograms for black crappies sampled with trap nets in South Island Lake, Minnehaha County, 2005, and 2007.

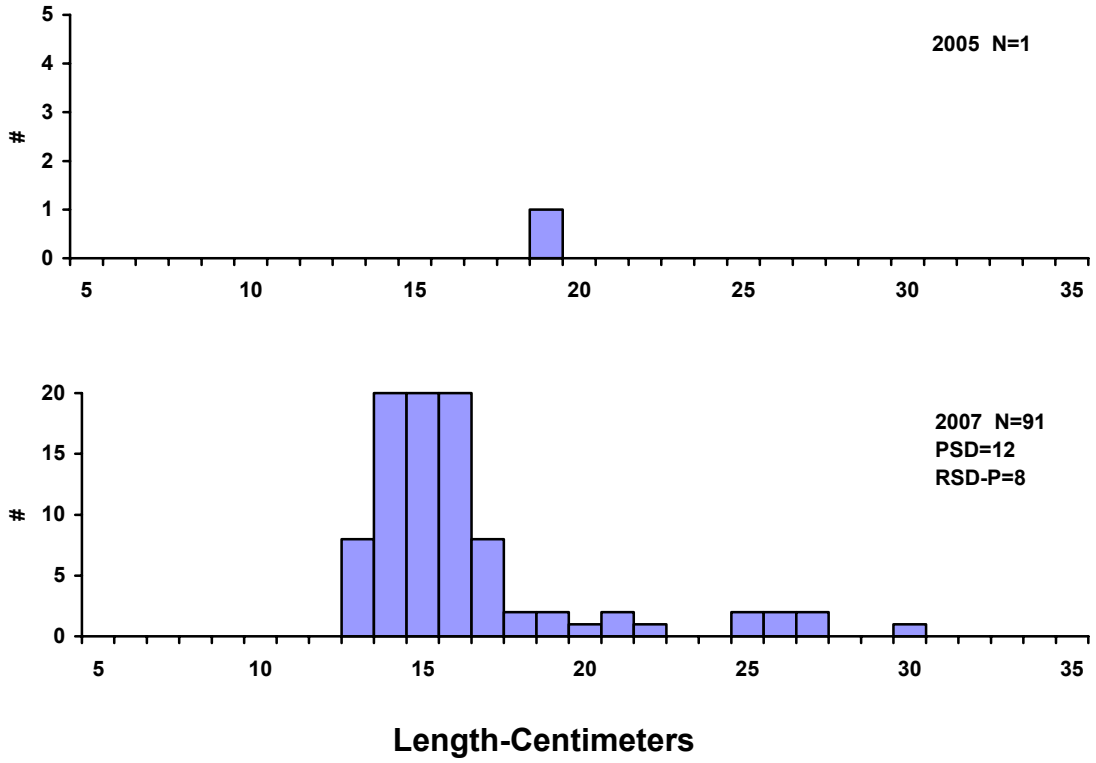

Figure 3. Length frequency histograms for yellow perch sampled with trap nets in South Island Lake, Minnehaha County, 2005, and 2007.

Appendix A. A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

Catch Per Unit Effort (CPUE) is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill-net nights of effort, catch per hour of electrofishing, etc.

Proportional Stock Density (PSD) is calculated by the following formula:

$$PSD = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

Relative Stock Density (RSD-P) is calculated by the following formula:

$$RSD\text{-}P = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters.

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25	38	51	63	76
Sauger	20	30	38	51	63
Yellow perch	13	20	25	30	38
Black crappie	13	20	25	30	38
White crappie	13	20	25	30	38
Bluegill	8	15	20	25	30
Largemouth bass	20	30	38	51	63
Smallmouth bass	18	28	35	43	51
Northern pike	35	53	71	86	112
Channel catfish	28	41	61	71	91
Black bullhead	15	23	30	38	46
Common carp	28	41	53	66	84
Bigmouth buffalo	28	41	53	66	84
Smallmouth buffalo	28	41	53	66	84

For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

Relative weight (Wr) is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.